

SUVOROV, B.D.

Acute gangrenous cholecystitis in a 7-year-old child. Khirurgia, Moskva  
34 no. 11:115-116 N '58.  
(MIRA 12:1)

1. Iz khirurgicheskogo otdeleniya Tul'skoy otdelencheskoy zheleznodorozh-  
noy bol'nitsy (nach. A.D. Verbovenco)  
(CHOLECYSTITIS, in inf. & child  
acute gangrenous in 7-year old (Rus))

SIMANOY, V.G., kand. tekhn. nauch.; SUVOROV, B.I., inzh.; VINOGRADOV, V.S., inzh.; KRYVOSHEKOV, Yu.V., inzh.; KRAVTSOV, V.M., inzh.; KUZHEL', S.A., inzh.

Results of some experimental studies on the drillability of Pervouralsk quartzite by thermal piercing. Izv. vys. ucheb. zav., gorn. zhur. S. no.7:62-97 '65. (MIR 18:9)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva (for Simanov, Suvorov). 2. Nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut gornogo i stroyatel'nogo oborudovaniya (for Vinogradov, Krivoshekov). 3. Rul'nik Pervouralskogo dinasovogo zavoda (for Kravtsov, Kuzhel'). Rekomendovana razdroj shakhtnogo stroitel'stva Sverdlovskogo gornogo instituta.

SUVOROV, B.M.

Organizing construction work on gas-condensate fields. Stroi.  
truboprov. 9 no.2:24-26 F '64. (MIRA 17:3)

1. Stroitel'noye upravleniye No.5 tresta Yuzhgazprovodstroy, Ros-  
tov-na-Donu.

KOSSOV, V.V.; BARANOV, E.F.; VOLODIN, L.N.; LEYDKIND, Yu.R.;  
MIKHALEVSKIY, B.N.; SUVOROV, B.P.; DETNEVA, E.V.

[The interbranch balance of production and production distribution of an economic region] Mezhotraslevoi balans proizvodstva i raspredeleniya produktsii ekonomicheskogo raiona. Moskva, Izd-vo "Nauaka," 1964. 209 p.

(MIRA 17:5)

1. Akademiya nauk SSSR. TSentral'nyy ekonomiko-matematicheskiy institut.

LEYBKIND, Yuriy Rafailovich; SUVOROV, Boris Pavlovich; GLYAZER,  
L.S., red.; SLUTSKINA, T.S.S., ml. red.

[Critical selection of design and planning decisions; a  
method of network scheduling] Kriticheskii otbor proektno-  
planovыkh reshenii; metod setevogo planirovaniia. 2. izd.  
Moskva, Ekonomika, 1965. 64 p. (MIRA 18:10)

...uvukov, B. T.

14(10); 3(5) P.2

PHASE I BOOK EXPLOITATION

SOV/2843

Soveshchaniye po ratsional'nym sposobam fundamentostroyeniya na vechnomerzlykh gruntakh

Trudy... (Transactions of the Conference on Efficient Methods of Building Foundations on Permafrost Soils) Moscow, Gosstroyizdat, 1959. 131 p. Errata slip inserted. 1,200 copies printed.

Ed. of Publishing House: N. M. Borshchevskaya; Tech. Ed.: Ye. L. Temkina.

PURPOSE: This book is intended for construction engineers, industrial planners and builders.

COVERAGE: This book contains reports originally read in Vorkuta in 1958 on experience gained in planning and building foundations in permafrost regions of the USSR. The reports were prepared for publication in the NIIOSP (Scientific Research Institute for the Study of Foundations and Underground Structures). The Introduction was written by Professor V. G. Bulychev. No references are given.

Card 1/4

Transactions of the Conference (Cont.)

SOV/2843

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AVAILABLE: Library of Congress	

Card 4/4

MM/mmh  
1-18-60

BEZRUKOV, B.A., inzh.; PODOL'TSEV, L.N., inzh.; SUVOROV, B.V., inzh.

Sinking reinforced concrete shells with a diameter of 4 m. into fine-grained sand. Transp.stroi. 11 no.4:19-21 Ap '61. (MIRA 14:5)  
(Archangel--Bridges--Foundations and piers)

RAFIKOV, S. R., SIVOVOV, E. V.

Turpentine--.

Catalytic oxidation of basic components of turpentine in the vapor phase. Dokl. AN SSSR  
82 no. 2, 1952 Institut Khimicheskikh Nauk Akademii Nauk Kaz.SSR. rcd. 24 Oct. 1951

SO: Monthly List of Russian Accessions, Library of Congress, June 1952 1952, Unclassified.

CH  
Mechanism of the catalytic oxidation of *p*-cymene in the gas phase. S. R. Rafikov and B. V. Savorgay (Chem. Inst. Acad. Nauk. Kazakh S.S.R.). *Doklady Akad. Nauk S.S.R.* 82, 415-17 (1952). Under conditions of mild oxidation of vapor of *p*-MeC<sub>6</sub>H<sub>4</sub>C<sub>6</sub>H<sub>5</sub>Me on V<sub>2</sub>O<sub>5</sub>, the main products are *p*-MeC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H, *p*-C<sub>6</sub>H<sub>5</sub>CO<sub>2</sub>H, CO<sub>2</sub>, and H<sub>2</sub>O. Other identified products are *p*-MeC<sub>6</sub>H<sub>4</sub>COMe, *p*-MeC<sub>6</sub>H<sub>4</sub>CHO, *p*-O<sub>2</sub>C<sub>6</sub>H<sub>4</sub>O, HCHO, and some BaH, BaOH, AcOH, *p*-C<sub>6</sub>H<sub>5</sub>OH, and *p*-MeC<sub>6</sub>H<sub>5</sub>OH. Absent were *p*-Mer-CH<sub>2</sub>COOH and *p*-MeC<sub>6</sub>H<sub>4</sub>CHO. Maleic anhydride, (CO<sub>2</sub>H)<sub>2</sub>, and HCO<sub>2</sub>H, which are known to be formed in the oxidation of *p*-O<sub>2</sub>C<sub>6</sub>H<sub>4</sub>O and of C<sub>6</sub>H<sub>6</sub>, were not found. Nor could peroxidic compds. be detected. A complete scheme of the oxidation is proposed in which the variety of products is derived from a primarily formed hydroperoxide, *p*-MeC(OH)C<sub>6</sub>H<sub>4</sub>Me, and a peroxide, *p*-MeC<sub>6</sub>H<sub>4</sub>OOC<sub>6</sub>H<sub>4</sub>Me.

An intermediate *p*-MeCO<sub>2</sub>H<sub>4</sub>Me can be oxidized to the intermediate hydroperoxide, *p*-HOOC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H<sub>4</sub>Me. The failure to detect the peroxides is due to their instability and rapid further reactions. The main feature of the catalytic oxidation is the primary attack on the iso-Pr group, in contrast to the low-temp. liquid-phase oxidation (Sensenian and Stubbs, *J.A.* 36, 6024) where the products are *p*-Mer-CH<sub>2</sub>COOH and *p*-MeC<sub>6</sub>H<sub>4</sub>CHO. N. Thon

SUVOROV, B. V.; Rafikov, S. R.

"Investigating the Oxidation of Organic Compounds. Report III. The Mechanism of the Oxidation of Terpenes"

Izv. AN Kazakh SSR, ser. Khim., No 5, 1953, 85-90

Studied the catalytic oxidation of alpha-pinene and dipentene in the vapor phase over  $V_2O_5$  using atmospheric oxygen. The main oxidation products were : p-tolylmethylketone, p-toluic acid, teraphthalic acid, p-quinone,  $CO_2$ , and water. (RZhKhim, No 3, 1955)

SO: Sum-No 845, 7 Mar 56

SUVOROV, B.V.; RAFIKOV, S.R.

Investigation in the field of oxidizing organic compounds. Report no.4.  
Catalytic oxidation of tetralin and decalin in the vapor phase. Izv.AN Kazakh.  
SSR no.118:82-89 '53. (MLRA 6:10)  
(Oxidation) (Tetralin) (Decalin)

SUVOROV, B.V.; RAFIKOV, S.R.

Oxidation of organic compounds. Part 7. Mechanism of catalytic  
oxidation of vapor phase camphene, cineole, and bornyl acetate.  
Izv. AN Kazakh. SSR no.123:70-74 '53. (MLRA 7:3)  
(Oxidation) (Terpenes)

SUVOROV, B. V.

Chemical Abst.  
Vol. 48 No. 5  
Mar. 1C, 1954  
Apparatus, Plant Equipment, and Unit  
Operations

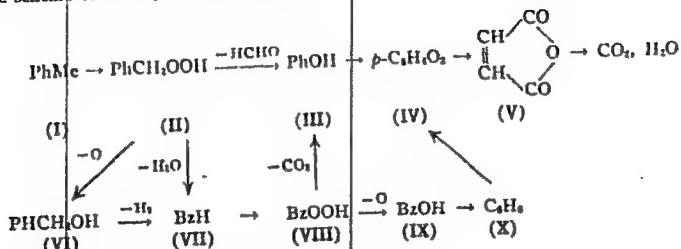
Methods of production of hydrogen in generators of balloon type. D. V. Sokol'skiy and B. V. Suvorov. *Vestnik Akad. Nauk Kazakh. S.S.R.* 10, No. 7 (Whole No. 100), 63-73 (1953).—The generation of H<sub>2</sub> in alkali-Si type generator is described. The equation appears to be Si + 2H<sub>2</sub>O → SiO<sub>2</sub> + 2H<sub>2</sub>. The recommended charge is FeSi-NaOH:H<sub>2</sub>O ratio of 1:9.75:4, which makes the method more economical and facilitates cleaning the app. G. M. K.

un (2)

S10001 E.V.

Mechanism of the vapor-phase oxidation of toluene, benzyl alcohol, and benzaldehyde, in the presence of benzaldehyde.  
Authors: B. V. Suvorov, S. R. Rafikov, and I. G. Anuchina.  
USSR Chem. Sci. Acad. Sci. Kazak. S.S.R., DOROZH  
Akad. Nauk S.S.R., 88, 79-82 (1953).—Oxidation of PhMe,  
in the temp. range 300-75° yields mainly CO<sub>2</sub>, H<sub>2</sub>O, BzH,  
BzOH, quinone, maleic anhydride, and anthraquinone, and  
small amts. of PhOH and HCHO. The process can be  
represented by the scheme of these products, only VI was

Chemical Abst.  
Vol. 48 No. 4  
Feb. 25, 1954  
Organic Chemistry



not detected. The scheme involves 2 intermediate peroxides, II and VIII. Anthraquinone (XI) was detected in the oxidation of I, but not in the oxidation of either VI or VII. The formation of XI evidently proceeds by way of I + O<sub>2</sub> + I → C<sub>6</sub>H<sub>6</sub> → XI. In the oxidation of I, the total amt. of VII + IX does not exceed 4%; that this is due to further reactions of VII and IX follows from the observation with a contact time shortened by a factor of 4, the yield of

VII is as high as 25% of the original I. In the oxidation of pure VII in the same temp. range, the main products are IX, IV, and V; as a function of the temp., their amts. pass, successively, through max. Advance addn. of H<sub>2</sub>O increases the total yields markedly, but without altering the consecutiveness of the max. Oxidation of VI also yields, in the main, the products of incomplete oxidation, but in somewhat smaller amts. than VII. Production of VII and of IX proceeds simultaneously; this is taken as evidence that IX is formed not only from VII, but also directly from VI, over the corresponding hydroperoxide, VI  $\xrightarrow{+O_2}$  PhCH(OH)OOH  $\xrightarrow{-H_2O}$  IX. Addn. of H<sub>2</sub>O vapor again increases the yields of the intermediate products, without altering the disposition of the max.

N. Thon

MF  
1-14-54

SLVCR60-B V

Oxidation of organic compounds. IV. Catalytic oxidation of tetrahydronaphthalene and decalinaphthalene in vapor phase. B. V. Surovov and S. R. Rafikov. Izvest. Akad. Nauk KazSSR, Ser. Khim., No. 118, Ser. Khim., No. 6, 82-9 (1953); cf. ibid. No. 5 (1951).—The oxidation of tetra- and decalinaphthalene in the vapor phase over V oxides was examd. The 1st phase of the reaction was shown to be dehydrogenation to  $C_9H_8$ . The main reaction products are  $\alpha-C_9H_7(CO)_2O$ , 1,4-naphthoquinone,  $C_9H_7H_2O$ , and  $CO_2$ . Small amts. of  $\beta$ -naphthoquinone,  $BzF$ , and  $BzOH$  are found. The overall reaction scheme can be developed from the peroxide theories expressed by Bakht [J. Russ. Phys. Chem. Soc. 29, 373 (1887)]. The "hydrox" hypothesis is severely critized for being unable to predict the actual reaction products.

G. M. Koslapoff

SUVCROV, B. V.

(3)

Dehydrogenation and irreversible catalysis of dipentene  
on vanadium oxides. S. R. Rafkov, B. V. Suvorov, and  
L. K. Tuturova. *Doklady Akad. Nauk S.S.R.* 94, 895-8

(1954).—Passage of pure dipentene over V oxide catalyst in  
absence of O<sub>2</sub> at 200–550° gave the following results: from  
300 to 50° there is a decline in the yield of unsaturates  
(from 80% to 37%), and along with dehydrogenation there  
is formation of *p*-cymene. At higher temp. the yield of the  
latter rises (to 80%) and methane appears in the catalyzate.  
Above 475° dehydrogenation predominates and the yield of  
*p*-cymene drops; methane is absent and the yield of *p*-  
isopropenyltoluene and H<sub>2</sub> rises, apparently as a result of  
direct dehydrogenation of the starting material. If enough  
air is admitted into the reaction tube to consume the liber-  
ated H<sub>2</sub>, no methane is formed, and the yield of *p*-cymene  
drops from 80% to 59%; not all H<sub>2</sub> is oxidized, however.  
At 450–500° there are found small amts. of Me<sub>2</sub>CO and *p*-  
methylacetophenone. With a 2-fold excess of air (over the  
above amt.) the yield of cymene drops still lower, and all H<sub>2</sub>  
is consumed in formation of H<sub>2</sub>O. Thus air represses the  
reactions of irreversible catalysis and favors the purely de-  
hydrogenative reactions. G. M. Kosolapoff.

NO.5 -

MF  
9-28-54

~~Suvorov, B. V.~~  
Sukhorov, B. V.

Oxidation of organic compounds. XII. Intermediate stages of catalytic oxidation of some monoalkylbenzenes in gas phase. S. K. Efimov, B. V. Suvorov, and A. V. Solomin. *Zhurnal Organicheskoi Khimii*, 1959, 5, 1200-1204. *Chemical Abstracts*, 1959, 51, 14276. Yield-temp. curves for various products of oxidation of alkylbenzenes are shown for air oxidation in the presence of mild V catalyst at 200-450° with 0.3-0.4 sec. contact time. MePh, EtPh and cumene were oxidized. The possible schemes of stepwise oxidation are shown. The possible oxidation products: AcPh, BzCHO, BzH, BzOH, C<sub>3</sub>H<sub>3</sub>, PhOH were also subjected to oxidation. BzOff, maleic anhydride and quinone were found to be substantially stable. At temp. under 350° almost the only products are those of incomplete oxidation; at higher temp. these products decline in concn.; above 390° the oxidation is complete.

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CIA-RDP86-00513R001654020008-5

*SPIKORN, B.W.*

APPROVED FOR RELEASE: 03/14/2001

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CIA-RDP86-00513R001654020008-5

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001654020008-5"

Борисов, А. А., Борисов, В. А. и др.; Борисов, А. А. и др. Борисов, А. А.

"The Kazakh Chemical Industry," Promyshlennost' Kazakhstana za 40 let; sbornik statey (The Industry of Kazakhstan During the Last Forty Years; Collection of Articles) Alma Ata, Kazgosizdat, 1957. 150 p 13,000 copies printed.

The article lists a number of chemical enterprises, mainly plants producing fertilizers, and discusses some of their problems. Other items discussed are potash salt, borates, and synthetic rubber.

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CIA-RDP86-00513R001654020008-5

B V  
Hydrocyanic acid  
B. V. Suvorov, S. R. Ratikov, V. S.  
Kudinova, and M. I. Khimira. U.S.S.R. 106,220, July 25,  
1957. HCN is obtained by the catalytic oxidation of a  
mixture of MeOtt and NH<sub>2</sub>OH. A mixt. of V and Sn oxides  
is used as the catalyst.

M. Hosch

5

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CIA-RDP86-00513R001654020008-5"

Suvorov, B.V.

Catalytic production of  $\alpha$ -toluic acid. B. V. Suvorov.

5

SUVOROV, B.V.

RAFIKOV, S.T.;UVOROV, B.V.; SOLOMIN, A.V.

Oxidation of organic compounds. Report No.14: Intermediate  
stages of incomplete oxidation of benzene in the vapor phase  
in the presence of tin vanadate. Izv.AN Kazakh.S.S.R.Ser.khim.  
no.1:58-66 '57. (MLRA 10:5)  
(Oxidation) (Benzene) (Tin vanadate)

AUTHOR	SUVOROV, B.V., RAFIKOV, S.R., KUDINOVA, V.S., KHMURA, M.I.,	20-2-31/67
TITLE	On the Mechanism of Oxidation Transformations of Methyl Alcohol Formaldehyde and Formic Acid in the Vapour phase in the Presence of Tin Vanadate. (O mekhani zme okislitel'nykh prevrashcheniy meti lovogo spirta formaldegi da i mirav'inoy kisloty v parovoy faze v prisutstvii vanadata alova)	
PERIODICAL	Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 355-357, (U.S.S.R.) Received 6/1957	Reviewed 7/1957
ABSTRACT	On the occasion of oxidation of alkyl benzols in the vapour phase on vanadium catalysts a considerable quantity of compounds of re- latively small molecules develops as by-products. Formaldehyde, carbon monoxide and dioxide among them develop the main products. The formation mechanism and further transformations of these "splin- ters" are in sufficiently investigated (methanol, formic acid and others would be expected especially on the occasion of oxidation of the benzol homologies with an isopropyl group). The present particulars indicate that the lowest aliphatic alcohols are the most unsteady ones. Larger quantities of corresponding aldehydes and products of a complete combustion develop from them by oxida- tion. The yield of acids is small, allegedly because of its unstea- diness under these conditions. Oxidation was carried out in a dis-	
Card 1/3		

On the Mechanism of Oxidation Transformations ~~XXXXXX~~  
of Methyl Alcohol, Formaldehyde and Formic Acid in the Vapour  
Phase in the Presence of Tin Vnadate.

20-2-31/67

drogen developed on this occasion, probably by formamide. Ammonia (3-5 g per 1 g initial matter) did not effect any essential modifications of the HCN. CO does not react with ammonia at the experimental temperature either. It is characteristic that on the occasion of interaction between formic acid and ammonia under similar conditions the HCN-yield does not exceed 50%. So the high HCN- yield cannot be caused by the intermediate formation of formic acid. The results of these latter experiments thus confirm (under the given experimental conditions) the above transformations of methanol and formaldehyde following each other.

(2 illustrations, 16 citations from publications)

ASSOCIATION Institute for Chemical Science of the Academy of Science of the  
U.S.S.R.  
PRESENTED BY ARBUZOV, B.A., Member of the Academy.  
SUBMITTED 29.9.1956  
AVAILABLE Library of Congress.  
Card 3/3

MAKAREVICH, V.G.; SUVOROV, B.V.; RAFIKOV, S.R.

Oxidation of organic compounds. Liquid phase oxidation of  $\alpha$ -pinene by  
molecular oxygen in the presence of inhibitors. Part 18. Izv. AN Kaz-  
zakh. SSR. Ser.khim. no.1:79-83 '58. (MIRA 12-2)

(Pinene) (Oxidation)

KAGARLITSKIY, A.D.; SUVOROV, B.V.

Vapor phase ammonolysis of benzaldehyde and benzoic acid on titanium vanadate. Izv. AN Kazakh. SSR. Ser. Khim. no.1:84-90 '58.  
(MIRA 12:2)

(Benzaldehyde)

(Benzoic acid)

(Ammonolysis)

KAGARLITSKIY, A.D.; SUVOROV, B.V.

Ammonolysis of trans- and cis-isomers of k,4-dimethylcyclohexane.  
Trudy Inst.khim.nauk AN Kazakh. SSR 2:112-115 '58. (MIRA 12:2)  
(Cyclohexane) (Ammonolysis)

66358

SOV/81-59-19-68673

5.3300 (A)

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 19, pp 310 - 311 (USSR)

AUTHORS: Solomin, A.V., Suvorov, B.V., Rafikov, S.R.

TITLE: The Oxidation of Organic Compounds. Communication XVI. On the Effect  
of the Structure of the Side Chain on the Vapor-Phase Oxidation of  
Monoalkylbenzenes in the Presence of Vanadium Catalysts

PERIODICAL: Tr. In-ta khim. nauk. AN KazSSR, 1958, Nr 2, pp 182 - 187

ABSTRACT: The vapor-phase oxidation has been studied of toluene (I), ethylbenzene  
(II), cumene (III),  $\alpha$ -methylstyrene (IV) and styrene (V) by moistened  
air in the presence of  $\text{Sn}(\text{VO}_3)_4$  (VI), the alloy  $\text{V}_2\text{O}_5 : \text{SnO}_2$  1:1 (VII)  
and  $\text{V}_2\text{O}_5 : \text{MoO}_3 : \text{P}_2\text{O}_5$  (1:0.34:0.003) (VIII). The experiments are  
carried out at a temperature of 300 - 400°C, the time of contact  
0.1 - 0.3 sec, the weight ratio of the oxidized substance to air  
1:75-1:85, and the supply rate of the initial substance and water  
5-6 g/hr and 100 - 105 g/hr respectively. The quantity of the side  
reactions depends on the structure of the initial alkylbenzene and on  
the conditions of the process conducted. At the oxidation of I and III  
over IV at a temperature  $> 340^\circ\text{C}$  principally  $\text{C}_6\text{H}_5\text{COOH}$  (IX), maleic

Card 1/2

66358

SOV/81-59-19-68673

The Oxidation of Organic Compounds. Communication XVI. On the Effect of the Structure of the Side Chain on the Vapor-Phase Oxidation of Monoalkylbenzenes in the Presence of Vanadium Catalysts

anhydride (X) and a small quantity of quinone are formed. At a temperature  $< 340^{\circ}\text{C}$ , besides IX and X 3-5% benzaldehyde is formed from I and 3-5% acetophenone from III. The oxidation of I, II and III over IV, and of II and III over VIII proceeds in an analogous way to the oxidation over VI, but the optimum conditions lie in the region of higher temperatures. In all experiments the presence of phenol, hydroquinone and formaldehyde has been proved. VIII is inactive in the reaction of the oxidation of I. The oxidation of IV and V proceeds analogously to the oxidation of monoalkylbenzenes. A diagram of the reaction and its possible trends, depending on the intermediate products, has been proposed. Communication XV see RZhKhim, 1959, Nr 11, 39570.

T. Sladkova

4

Card 2/2

MANUKOVSKAYA, L.G.; SUVOROV, B.V.; RAFIKOV, S.R.

Oxidation of organic compounds. Report No.17: Autoxidation of  
n-butyraldehyde, benzaldehyde and p-tolualdehyde. Trudy Inst.  
khim.nauk AN Kazakh. SSR 2:188-196 '58. (MIRA 12:2)  
(Oxidation) (Aldehydes)

S U V O R O V , B. V .

AUTHORS:	Solomin, A. V., Suvorov, B. V., Rafikov, S.R.	79-1-28/63
TITLE:	The Oxidation of Organic Compounds (Okisleniye organicheskikh soyedineniy). XV. On the Oxidation of Ethyl Benzene in the Vapor-Phase State Over Tin Vanadate (XV. O parofaznom okislenii etilbenzola na vanadate olova).	
PERIODICAL:	Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 1, pp. 133-138 (USSR).	
ABSTRACT:	The oxidation of alkyl benzenes with a secondary $\alpha$ -carbon atom in the vapor-phase state had not been sufficiently investigated. Only one paper had been published on this subject in which it is pointed out that on passage of ethylbenzene vapors in a mixture with air only benzoic acid is formed. The yield at 270-280° C amounted to 4%. The aim of the present paper was an exact investigation of the fundamental rules governing this reaction, special attention in the oxidation being paid to the intermediate and final products. Some of the intermediate products were oxidized under equal conditions. The obtained experimental results show that the vapor-phase oxidation of ethylbenzene with air takes a very complicated course and according to the prevailing conditions leads to	

Card 1/3

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The Oxidation of Organic Compounds. XV. On the Oxidation of Ethyl Benzene in the Vapor-Phase State Over Tin Vanadate.

79-1-28/63

the formation of different oxygen-containing compounds. Thus the authors beside benzoic acid also found benzaldehyde, acetophenone, quinone, maleic anhydride, CO and CO<sub>2</sub> and quantitatively determined their amounts. The dependence of the yield of some of the enumerated reaction products on temperature is represented in diagram, 1. A scheme of the fundamental direction of the vapor-phase oxidation of ethylbenzene over tin vanadate was suggested which is based on the data of the peroxide theory and on the theory of the radical-chain processes. The assumption was uttered that the oxidation of ethylbenzene might simultaneously proceed in several parallel directions, in main as well as in side directions. Each of those represents a multistage process of a gradual decomposition of the carbon skeleton, with a subsequent formation of a large number of by-products. The final stage of each of these directions consists of the formation of products of the completed oxidation. There are 5 figures and 12 references, 10 of which are Slavic.

ASSOCIATION: Institute for Chemical Sciences AN Kazakh SSR (Institut khimicheskikh nauk Akademii nauk Kazahskoy SSR).  
Card 2/3  
2

SUROKOV D. V.

File: SUROKOV

Akademicheskaya str. 22/22, Institute of Macromolecular Chemistry, Academy of Sciences USSR, 107072, Moscow, Russia. Tel.: (095) 534-12-00. 2,000 copies printed.

M. I. M. Emanuel' [Corresponding Member, Academy of Sciences USSR], EA. of Publishing House E. M. Dymovskaya Tsch. Ed. I. P. Andreeva.

**PURPOSE:** This collection of articles is intended for chemists interested in polymer hydrocarbon oxidation reactions, particularly for those specializing in polymer science.

**CONTENTS:** This collection of 25 articles represents the results of investigations over a period of several years on problems of hydrocarbon oxidation. The authors present their own theoretical and experimental data and also draw from current literature. No personalities are mentioned. References accompany most of the articles.

Author: S. B. and N. V. Smirnov [Institute of Chemistry, Academy of Sciences Kazakhstan SSR, Karaganda]. Mechanism of the Action of Inhibitors on Oxidation by Molecular Oxygen.

The authors show that oxidation inhibitors are not effective when they oxidize faster than the compounds being oxidized. Optimum inhibiting effect occurs in the initial reaction stages when the concentrations of inhibitor are comparable with concentrations of free radicals and peroxides.

Author: L. F., L. G. Boroditskaya, and T. A. Ivanova [Novosibirsk State University named M. V. Lomonosov]. Using the Liquid-Phase Method to Study Intermediate Reactions of Fatty Acids and Esters in the Liquid-Phase Oxidation of Polyesters.

The authors have synthesized a series of stearic acids with the carboxyl radical tagged with Cr. It is shown that the main portion of esters formed during partial oxidation are not products of direct oxidation of acids by the alcohol formed during oxidation, but are formed by the decomposition and rearrangement of free radicals from esters of alpha-hydroperoxides.

Author: V. Sh. and N. M. Emanuel' [Institute of Chemical Physics]. Mechanism of the Optical Sensitization of Liquid-Phase Oxidation by Molecular Oxygenates of 2,7-Dimethyloctane.

The combined effects of photochemical and sensitized oxygenation and the catalytic action of polyalcohol metal (Cu and Fe) determine the rate of oxidation of 2,7-dimethyloctane investigated. Additives of Cu and Mn play the role of photoinitiators. The actions of light, injection, metal-catalyzing low-temperature polymerization processes, can be successfully employed for initiating oxidation reactions. The role of the formation of free radicals which cause chain acceleration, propagation and scission is discussed.

Author: Yu. Ya. Polozayev, and V. M. Prigozhin [Institute of Chemical Physics]. Liquid-Phase Oxidation of 2,7-Dimethyloctane.

Using the liquid-phase method (all-alcohol deoxidation system for investigating Oxidation-Reduction Systems for Initiating Oxidation Processes and the mechanism of their action), the mechanism of the action of polyalcohol metal and the metal of their action on the oxidation of 2,7-dimethyloctane are investigated. Additives of Cu and Mn widely used for initiating low-temperature polymerization processes, can be successfully employed for initiating oxidation reactions. The role of the formation of free radicals which cause chain acceleration, propagation and scission is discussed.

Author: Z. E., L. G. Boroditskaya, and N. M. Emanuel' [Institute of Chemical Physics]. Change in the Mechanism of n-Decane Oxidation in the Course of the Reaction.

The authors have used  $\text{Cr}^{2+}$ -tagged n-decane to investigate changes in the rates of formation and consumption of methyl hydroperoxides during the oxidation of n-decane. The hypothesis that variations in the activities of radicals carrying on chain reactions are proportional to the accumulation of oxygen-containing oxidation products in the structure is offered as a plausible explanation of the observed changes.

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RAFIKOV, S.R.; SUVOROV, B.V.; KAGARLITSKIY, A.D.

Dehydrogenation of benzylamine on titanium vanadate under conditions  
of oxidative ammonolysis. Izv,AN Kazakh.SSR,Ser.khim. no.1:77-79  
'59.

(Benzylamine)

(Dehydrogenation)

(Titanium vanadate)

(MIRA 13:6)

SUVOROV, B.V.; RAFIKOV, S.R.; KHMURA, M.I.

Oxidation of organic compounds. Report No.23: Vapor phase catalytic oxidation of P-cymene by humid air. Izv.AN Kazakh.SSR.Ser.khim.  
no.1:80-84 '59.  
(Cymene)

87670

S/081/60/000/021/003/018  
A005/A001*11,1100*

Translation from: Referativnyy zhurnal, Khimiya, 1960, No.21, p. 47, # 83966

AUTHORS: Rafikov, S. R., Suvorov, B. V.

TITLE: On the Problem of the Mechanism of Inhibitor Action on the Oxidation by Molecular Oxygen

PERIODICAL: V sb.: Okisleniye uglevodorodov v zhidkoy faze. Moscow, AN SSSR, 1959, pp. 94-100

TEXT: At the oxidation of cyclohexene (at 40°C), additions of 0.1% hydroquinone, 0.05% phenol, 0.05% n-aminophenol, 0.025% n-phenylene diamine, 0.6% aniline, 0.05% diphenyl amine, added at the beginning of the process, give rise to an induction period of 5-7 hours duration; additions introduced during the reaction process decelerate the process when 2-11% hydrogen peroxide are accumulated in the system. At the oxidation of C<sub>6</sub>H<sub>5</sub>C<sub>2</sub>H<sub>5</sub> (at 50°C) in the presence of hydroquinone, the latter is converted into quinone during the induction period. At 50-180°C, O<sub>2</sub> does not oxidize essentially hydroquinone, phenol, and pyrogallol. H<sub>2</sub>SO<sub>4</sub> (0.05%) strongly inhibits the oxidation of i-propylbenzene and benzaldehyde,

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S/081/60/000/021/003/018  
A005/A001

On the Problem of the Mechanism of Inhibitor Action on the Oxidation by Molecular Oxygen

in the authors' opinion, in consequence of the formation of phenol at the interaction of  $H_2SO_4$  with the hydrogen peroxide of i-propylbenzene. The action mechanism of inhibitors of different chemical nature is discussed.

R. Milyutinskaya

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

MANUKOVSKAYA, L.G.; RAFIKOV, S.R.; SUVOROV, B.V.

Oxidation of organic compounds. Report No. 21: Liquid-phase catalytic oxidation of n-toluic acid and some of its derivatives by molecular oxygen. Izv.AN Kazakh.SSR.Ser.khim. no.2: 62-67 '59. (MIRA 12:8)

(Toluic acid)

(Oxidation)

5(1,3)

AUTHORS:

Suvorov, B. V.  
Kostromin, A. S.

Rafikov, S. R., Khnura, M. I., Kudinova, V. S.,

SOV/153-2-4-27/32

TITLE:

Direct Synthesis of Dinitriles of the Aromatic Sequence From  
Dialkyl Benzenes and Terpene HydrocarbonsPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya  
tekhnologiya, 1959, Vol 2, Nr 4, pp 614 - 618 (USSR)ABSTRACT: Aromatic dinitriles are promising raw materials for the produc-  
tion of phthalic acids and diamines of the aliphatic-aromatic  
and alicyclic sequence. These again are the initial products  
for the production of polyesters and polyamides (Ref 1). The  
latter, however, can be directly obtained from dinitriles by  
their interaction with secondary and tertiary highly molecular  
alcohols (Ref 2). Hence the great interest in the new ways of  
producing dinitriles of various structures. After giving a sur-  
vey of publications (Refs 3,4) the authors state that they have  
been dealing with the catalytic ammonolysis of organic compounds  
for years (Refs 5-7). With regard to their task of synthesizing  
dinitriles they pay special attention to the ammonolysis of  
dialkyl benzenes especially in the presence of air. The apparatus

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Direct Synthesis of Dinitriles of the Aromatic Sequence SOV/153-2-4-27/32  
From Dialkyl Benzenes and Terpene Hydrocarbons

used for this purpose is filled with a granulated catalyst. Mixed catalysts of oxides of vanadium, tin, titanium, and some other elements with varying valence proved to be most effective. p-Xylene is the most accessible and promising raw material in the synthesis of dinitrile of terephthalic acid. Hence its transformations were investigated most thoroughly. Figure 1 shows the qualitative composition and the quantitative conditions of the reaction products of a characteristic experimental series. Hence it appears that oxidative ammonolysis yields a very complicated scale of substances. The main products, however, are the dinitrile and p-tolunitrile required. The composition of the reaction products greatly depends on the reaction conditions. The process can be directed to the special formation of any product by the choice of the respective reaction products. The structure of the initial product is also of importance. In addition to p-xylene, other p-dialkyl benzenes as well as hydroaromatic and terpene hydrocarbons underwent the reaction mentioned. All of them yielded terephthalic-acid dinitrile, and may thus be considered a source of reserve raw materials. Dinitriles of isophthalic and o-phthalic acid are

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Direct Synthesis of Dinitriles of the Aromatic Sequence SOV/153-2-4-27/32  
From Dialkyl Benzenes and Terpene Hydrocarbons

very interesting. In addition to xylylene diamines (for the production of high-melting, fiber-forming polyamides), other valuable compounds can be obtained: orthoisomer (for phthalocyanine dyes (Ref 9), for refractory varnishes and glasses). Their yield exceeded 50%. The ammonolysis mentioned can also take place without oxygen (Ref 3), but the yield of dinitriles remains small (5-10%) (Fig 2). Aromatic aldehydes and acids react readily with ammonia under similar conditions and give nitrile yields close to theoretical ones (Ref 10). A report on the above paper was given at the All-Union Conference on "Ways of Synthesis of Initial Products for the Production of High Polymers" which took place in Almaty from September 29 to October 2, 1958. There are 2 figures and 11 references, 8 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk AN KazSSR (Institute of Chemical Sciences of the Academy of Sciences, Kazakh SSR)

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AUTHORS:	Kagarlitskiy, A. D., Suvorov, B. V., Rafikov, S. R.	SOV/79-29-1-34/74
TITLE:	On the Reaction of Acetophenone With Gaseous Ammonia Over Titanium Vanadate (O reaktsii vzaimodeystviya atsetofenona s ammiakom v gazovoy faze na vanadate titana)	
PERIODICAL:	Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 157-158 (USSR)	
ABSTRACT:	On the basis of the synthesis of the trimethyl pyridine from acetone and ammonia according to Chichibabin (Ref 1) it could be expected that in the ammonolysis of acetophenone a 2,4,6-triphenyl pyridine were formed. It was the objective of the present paper to prove that this reaction can really take place. Molten titanium vanadate was chosen as a catalyst which, as previously established (Ref 7), has no bad dehydrating qualities. Already the first ammonolysis experiments of acetophenone have shown that in this case really 2,4,6-triphenyl pyridine results as the main product. This was obtained under optimum conditions at 370-380° in a 35% yield, referred to the transmitted, and in a 98% yield referred to the acetophenone reacted which may easily be seen from the diagram. At 400° and more the yield decreased as crack reactions took place	
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On the Reaction of Acetophenone With Gaseous Ammonia Over Titanium Vanadate

SOV/79-29-1-34/74

under the formation of low-molecular products. In the experiments performed below 350° the resinous products were separated on the surface of the catalyst, whereby its activity was reduced. It was however possible to restore its activity in the air current at 400°. The catalyst was made by melting titanium dioxide with vanadium pentoxide according to the formula  $Ti(VO_5)_4$ . There are 1 figure and 9 references, 5 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR  
(Institute of Chemical Sciences of the Academy of Sciences, Kazakhskaya SSR)

SUBMITTED: November 22, 1957

Card 2/2

AUTHORS:

Manukovskaya, L. G., Suvorov, B. V., Rafikov, S. R.

SOV/79-29-1-35/74

TITLE:

Oxidation of Organic Compounds (Okisleniye organicheskikh sovodeniy) XIX. On the Catalytic Oxidation of p-Xylene With Molecular Oxygen in the Liquid Phase (XIX. O zhidkofaznom kataliticheskom okislenii p-ksilola molekulyarnym kislorodom)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 158-165 (USSR)

ABSTRACT:

The oxidation of the alkyl benzenes with molecular oxygen is one of the most comfortable syntheses of noble oxygen-containing aromatic compounds. At present, acetophenone and methylphenyl carbinol are thus obtained from ethyl benzene (Ref 1), as well as the hydrogen peroxide of cumene from cumene (Ref 2), the p-tertiary butylbenzoic acid from p-tertiary butyl toluene (Ref 3), etc. In the last years many similar methods of synthesizing the terephthalic acid from p-xylene were devised from, among which that having four stages (Ref 4) proved to be the cheapest. Although many scientists investigated the catalytic oxidation in the liquid phase (Refs 5-8) and described the technological scheme of the process in publications (Ref 4), some questions regarding the reaction mechanism re-

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SOV/79-29-1-35/74

Oxidation of Organic Compounds. XIX. On the Catalytic Oxidation of p-Xylene  
With Molecular Oxygen in the Liquid Phase

mained unsolved, e. g. that on the nature of the catalytic action, on the dependence of the reaction rate and the yield of oxidation products on various concentrations as well as the question of the nature and succession of the transformation of the p-xylene itself based on oxidation, etc. The solution of some of these problems was the purpose of this paper. It was established that the oxidation of p-xylene without catalyst proceeds very slowly, wherein also the aromatic acids are formed in negligible quantities only. In the presence of cobalt acetate below 130° the oxidation proceeds at a very low rate as well. For this reason, all following experiments with the catalyst were carried out at 133-135°. Thus, the oxidation of p-xylene with molecular oxygen in the presence of cobalt acetate in the liquid phase was investigated, p-toluic and terephthalic acid resulting as the main products. In figure 1 the results of two experimental series with 0.1 and 1% cobalt acetate are presented in order to determine the influence exerted by the duration of the experiment upon the oxidation of p-xylene. Figure 3 illustrates the dependence of the yield of the main oxidation products of p-xylene on the concentration

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SOV/79-29-1-35/74

Oxidation of Organic Compounds. XIX. On the Catalytic Oxidation of p-Xylene  
With Molecular Oxygen in the Liquid Phase

of the catalyst. There are 5 figures, 1 table, and 21 references, 14 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR  
(Institute of Chemical Sciences of the Academy of Sciences  
Kazakhskaya SSR)

SUBMITTED: December 11, 1957

Card 3/3

SOV/80-32-2-27/56

AUTHORS: Kagarlitskiy, A.D., Suvorov, B.V., Rafikov, S.R.

TITLE: Ammonolysis of Benzaldehyde on Mixed Oxide Catalysts  
(Ammonoliz benzal'degida na smeshannykh okisnykh katalizatorakh)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 2,  
pp 388-391 (USSR)

ABSTRACT: During the interaction of benzaldehyde with ammonia in the presence of titanium vanadate and tin vanadate benzonitrile is formed with an output of 67 - 82%. Lophine is produced in small amounts by a side reaction. Another side reaction is the hydration of benzaldehyde to toluene.  
There is 1 graph and 11 references, 2 of which are Soviet, 6 American, 2 English, and 1 German.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk KazSSR (Institute of Chemical Sciences of the Academy of Sciences of the Kazakh SSR)

SUBMITTED: June 12, 1957

Card 1/1

5 (3)

## AUTHORS:

Rafikov, S.R., Suvorov, B. V.,  
Zhubanov, B. A., Khmura, M. I.,  
Prokof'yeva, M. V.

SOV/20-126-6-39/67

## TITLE:

Synthesis of Nicotinic Acid and Its Amides by Way of Nicotino-nitrile (Sintez nikotinovoy kisloty i yeye amida cherez nikotinonitril)

## PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 6, pp 1286 -1288  
(USSR)

## ABSTRACT:

In spite of an increasing demand of the substances mentioned in the title (Refs 1,2) the methods of production applied, give only low yields (Refs 3-5). The authors produced these two substances by saponification of nicotinic acid nitrile which is formed in high yields in an oxidative ammonolysis of the  $\beta$ -picoline on vanadium catalysts (Refs 6,7).  $\beta$ -picoline was isolated from the corresponding industrially produced fraction. The mentioned ammonolysis was carried out in a continuous flow apparatus. Granulated tin-vanadate served as catalyst, air was used as oxidizer. Ammonia was introduced into the reaction zone in the form of a 20% aqueous solution. The duration of contact was 0.2 - 0.6 sec. Nicotino nitrile and the  $\beta$ -picoline which was

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Synthesis of Nicotinic Acid and Its Amides by Way  
of Nicotino-nitrile

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not reacted were extracted by sulphuric ether, the extract was dried over roasted sodium sulphate and fractionated. In the saponification by means of water under pressure (with some drops of water - ammonia) nicotinic acid amide (melting point  $129-130^{\circ}$ ) and nicotinic acid ( $232-234^{\circ}$ ) were formed. Their yield depends on the reaction conditions of saponification. By changing these conditions either the acid or the amide may be obtained with quantitative yields. The duration of contact is without importance in the temperature range investigated for the  $\beta$ -picoline ammonolysis. Figure 1 shows that if the reaction temperature is increased from  $310$  to  $370^{\circ}$  the nicotino-nitrile yield is increased. A further temperature increase up to  $400^{\circ}$  reduces this yield. In this connection the  $\text{CO}_2$  formation increases rapidly. It may therefore be assumed that at temperatures  $>370^{\circ}$  reactions of an intensive oxidation take place besides the oxidative ammonolysis of  $\beta$ -picoline. Since the maximum yield of nicotino-nitrile (65% of the theoretically computed yield) and the minimum  $\text{CO}_2$  formation were attained in the case of a 20-fold ammonia excess the processes of intensive oxidation are

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suppressed by ammonia. Thus, the mentioned ammonolysis produces high yields (over 65%) of nicotinic acid or nicotinamide (over 60%) with respect to the initial product. Oxidizers which are shortage goods are not used. Standard apparatus is necessary. There are 1 figure and 9 references, 6 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk KazSSR (Institute of Chemical Sciences of the Academy of Sciences of the KazakhSSR)

PRESENTED: October 20, 1958, by M. M. Shemyakin, Academician

SUBMITTED: October 23, 1958

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67274

SOV/31-60-1-6/20

AUTHORS: Suvorov, B.V. and Rafikov, S.R.TITLE: New Method to Synthesize Diamines and Dibasic Carboxylic Acids for the Production of High Polymers<sup>1</sup>PERIODICAL: Vestnik Akademii nauk Kazakhskoy SSR, 1960, <sup>16</sup> Nr 1,  
pp 44-50

ABSTRACT: This is a study - the 25th instalment of the serialized report on the "Oxidation of Organic Compounds" - of oxidizing ammonolysis reaction of aromatic hydrocarbons. In their experiments, which were carried out with the help of M.I. Khmura, V.S. Kudinova, A.S. Kostromin, A.D. Kagarlitskiy, B.A. Zhubanov and M.V. Prokof'yeva, the authors paid special attention to the study of the mechanism of catalytic ammonolysis of alkyl benzenes and the effect of different factors on the yield of nitriles.<sup>1</sup> The reaction was carried out with an installation of the flow-through type with a metallic reaction tube of 1100 mm in length and an inner diameter of 21 mm. With the aid of dosing devices hydrocarbon, aqueous ammonia solution

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New Method to Synthesize Diamines and Dibasic Carboxylic Acids for the Production of High Polymers

and, in most cases, air were introduced into the upper part of the reactor. The photograph gives the outer aspect of the installation. The reaction tube was filled with granulated catalyst. During their experiments the authors tested a great number of different catalysts. The results showed that catalysts of the mixed type, prepared on the basis of oxides of vanadium, tin, titanium and some other elements of changing valency, are most efficient. The basic particulars of the reaction mechanism of oxidizing ammonolysis of aromatic hydrocarbons were particularly ascertained in the experiments with monoalkyl benzenes Ref 16, which transform into benzonitrile with a nearly theoretical yield. Dinitrile synthesis was studied on such objects as isomeric xylenes, p-cymene, p-diethylene and p-diisopropyl benzene and also on the example of terpene hydrocarbons Ref 17, 20, 21. For the synthesis of terephthalic dinitrile by means of

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Sov/31-60-1-6/20

New Method to Synthesize Diamines and Dibasic Carboxylic Acids for  
the Production of High Polymers

catalytic ammonolysis of hydrocarbon the authors consider p-xylene as the most easily obtainable and prospective raw material. Its transformation, therefore, under the given conditions was an object of a particularly specified study. The authors investigated within large limits the effect of mutual correlation and volumetric feeding rate of the initial materials, of the time of contact, reaction temperature, catalysts etc. The data shows that as a result of oxidizing ammonolysis of p-xylene a very great number of different substances will be obtained. The basic products of the reaction, however, are terephthalic dinitrile and p-tolunitrile. In the reaction products terephthalic acid is always present in the form of an ammonium salt. In experiments with comparatively low reaction temperature the formation of p-toluamide and terephthalic diamide can be observed. Gaseous reaction products are carbon monoxide, hydrogen cyanide, carbon

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dioxide. Their yield increases with rising temperature and may be considerable at 430-450° C. In addition to p-xylene a number of other materials (other p-dialkyl benzenes, some hydroaromatic and terpene hydrocarbons) were subjected to oxidizing ammonolysis. The reaction was called so by the authors because the process of nitrile formation develops under the simultaneous action of ammonia and oxygen on the initial substance. There are 1 photograph and 33 references, 30 of which are Soviet and 3 English.

Card 4/4

5.3400

77527  
SOV/80-33-1-36/49

AUTHORS: Rafikov, S. R., Suvorov, B. V., Makarevich, V. G.

TITLE: The Liquid-Phase Oxidation of Cyclohexene With Molecular Oxygen in the Presence of Inhibitors. Communication XXIV

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 201-209 (USSR)

ABSTRACT: Auto-oxidation of cyclohexene in the presence of phenol, hydroquinone, p-benzoquinone, quinhydrone, dimethyl ether of hydroquinone, p-, and o-aminophenols, p-phenylenediamine, aniline, diphenylamine, and dimethylaniline was investigated. It was established that all the above compounds except dimethyl ether of hydroquinone are inhibitors of the reaction. Antioxidizing properties of the investigated compounds depend on their composition and on the structure. The degree of activity is as follows: phenol < hydroquinone < amino-phenol < phenylenediamine > aniline. Dimethylaniline and diphenylamine occupy a place between aniline and

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The Liquid-Phase Oxidation of Cyclohexene  
With Molecular Oxygen in the Presence of  
Inhibitors. Communication XXIV

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p-phenylenediamine. The total antioxidantizing effect depends not only on the individual activity of inhibitor, but also on its concentration. Most of the above inhibitors are capable of reacting with hydroperoxide of cyclohexene. The inhibiting action of compounds having phenolic character is connected with the presence of a mobile hydrogen atom of the hydroxyl group. In aromatic amines, not only the hydrogen atoms of the amino group take part in the process, but also, possibly, the unshared electron pair of nitrogen. The results of oxidation are given below in the following figures: (in all figures A = yield of the mentioned products (in %); B = time (in hr); 1 = without inhibitor).

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The Liquid-Phase Oxidation of Cyclohexene With Molecular Oxygen in the Presence of Inhibitors. Communication XXIV

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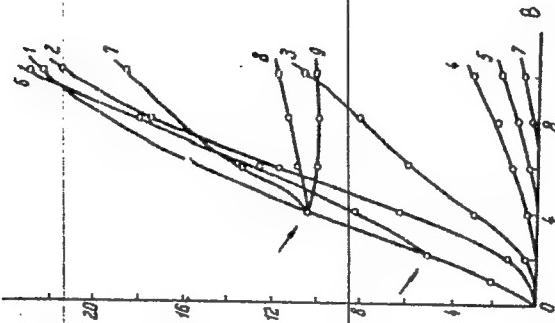


Fig. 1. Oxidation of cyclohexene (I) in the presence of phenol. Amounts are given in % of the corresponding inhibitors. 2 = 0.02, 3 = 0.05; 4 = 0.1, 5 = 0.2; 6 = 0.25; 7 = 0.5; 8 = 5.0, 9 = 10.0.

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The Liquid-Phase Oxidation of Cyclohexene  
With Molecular Oxygen in the Presence of  
Inhibitors. Communication XXIV

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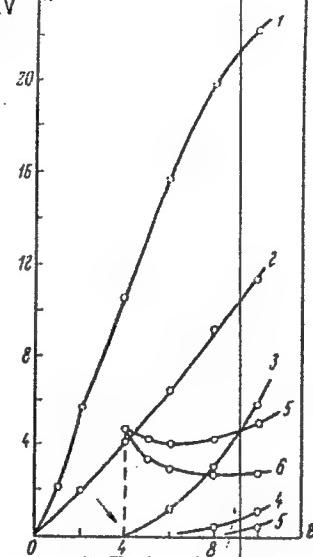


Fig. 2. Oxidation of I in the presence of hydroquinone:  
2 = 0.05; 3 = 0.1; 4 = 0.25; 5 = 0.5; 6 = 1.0;  
7 - 5.0; 8 = 10.0.

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The Liquid-Phase Oxidation of Cyclooctaene  
With Molecular Oxygen in the Presence of  
Inhibitors. Communication XXIV

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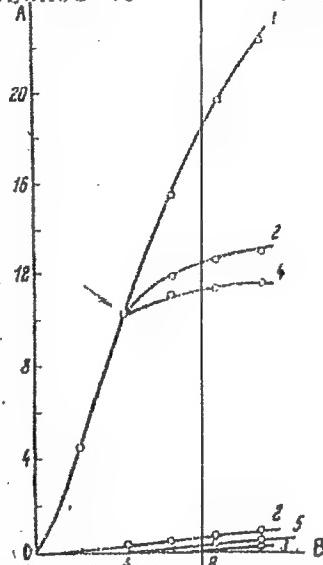


Fig. 3. Oxidation of I in the presence of quinone and  
quinhydrone: 2 = 0.1; 3 = 0.2; 4 = 1.0; 5 = 0.1, of  
quinhydrone.

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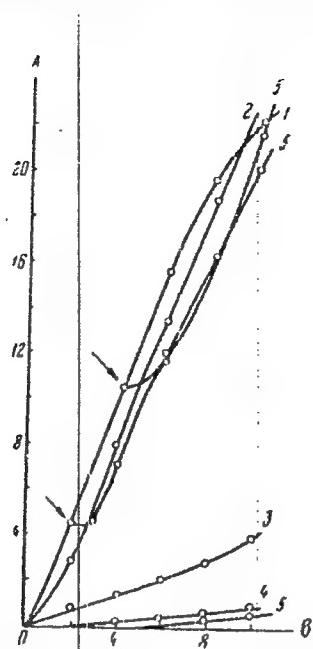
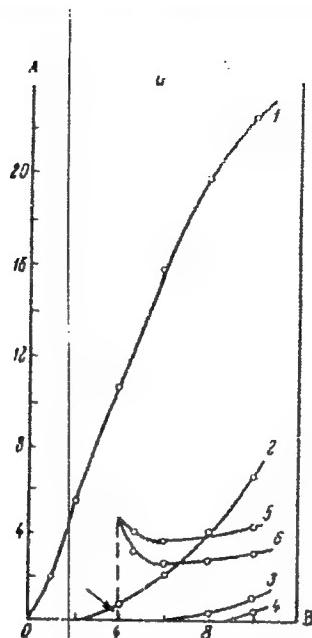


Fig. 4. Oxidation of I in the presence of aniline:  
2 = 0.1; 3 = 0.2; 4 = 0.3; 5 = 0.6.

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Fig. 5. Oxidation of I in the presence of p-phenylene-diamine: 2 = 0.001; 3 = 0.005; 4 = 0.05; 5 = 0.25; 6 = 0.5; 7 = 5.0; 8 = 10.0.

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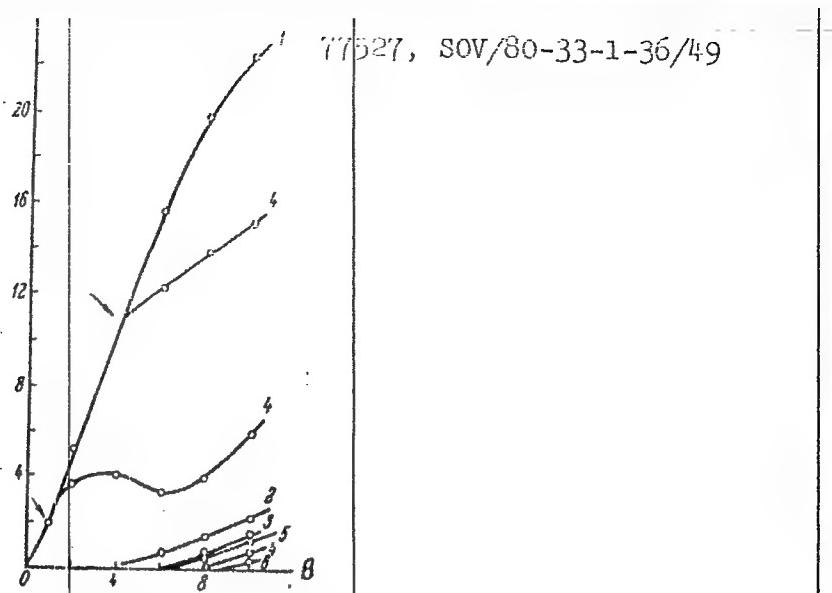


Fig. 6. Oxidation of I in the presence of p- and o-aminophenols: 2 = 0.001, 3 = 0.005, and 4 = 0.025 for p-aminophenol; 5 = 0.005 and 6 = 0.025 for o-aminophenol.

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77527, Sov/30-33-1-36/49

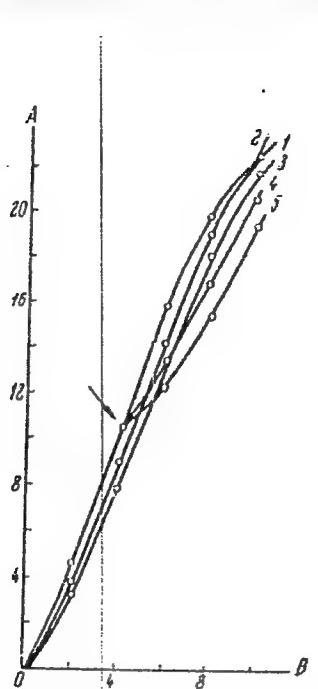
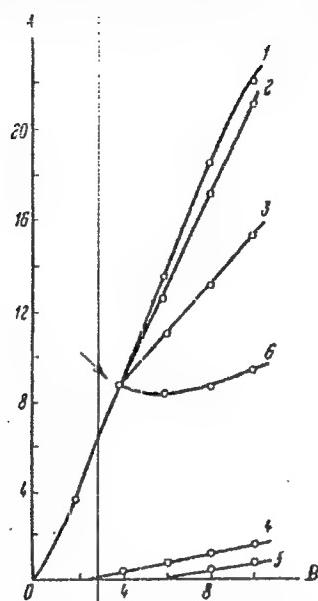


Fig. 7. Oxidation of I in the presence of dimethyl ether of hydroquinone: 2 = 0.1; 3 = 0.5; 4 = 1.0; 5 = 5.0.

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7527, Sov/80-33-1-36/49

Fig. 8. Oxidation of I in the presence of diphenylamine: 2 = 0.001; 3 = 0.01; 4 = 0.05; 5 = 0.1; 6 = 1.0

Card 10/12

17527, Sov/30-33-1-36/49

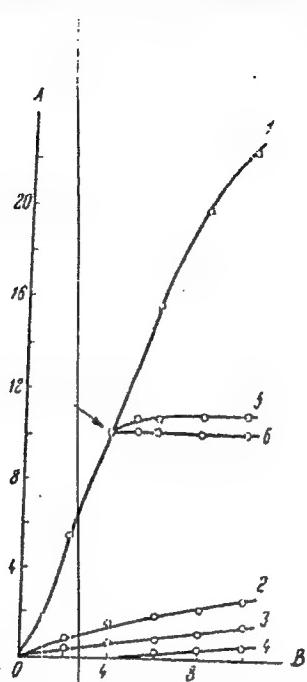


Fig. 9. Oxidation of I in the presence of dimethylaniline: 2 = 0.1; 3 = 0.2; 4 = 0.6; 5 = 1.0; 6 = 5.0.

Card 11/12

77527  
SOV/80-33-1-36/49

There are 9 figures; 1 table; and 23 references, 12 Soviet, 3 German, 6 U.S., 2 U.K. The 5 most recent U.S. and U.K. references are: R. H. Rosenwald, Ind. Eng. Ch., 42, 162 (1950); G. S. Hammond, J. Am. Chem. Soc., 77, 3238 (1955); C. E. Boozer, et al., J. Am. Chem. Soc., 77, 3233 (1955); C. J. Pedersen Ind. Eng. Ch., 48, 1881 (1956); L. F. Fleser, A. E. Oxford, J. Am. Chem. Soc., 64, 2060 (1942).

SUBMITTED: May 25, 1959

Card 12/12

KAGARLITSKIY, A.D.; SUVOROV, B.V.; RAFIKOV, S.R.

Oxidation of organic compounds. Report No.25: Oxidative  
ammonolysis of some monoalkylbenzenes. Trudy Inst.khim.nauk  
AN Kazakh.SSR 7:57-67 '61. (MIRA 15:8)  
(Benzene) (Ammonolysis)

S/850/62/008/000/003/004  
B119/B101

AUTHORS: Suvorov, B. V., Rafikov, S.R., Kagarlitskiy, A. D.,  
Sabirova, A. A., Svetasheva, V. A.

TITLE: Oxidation of organic compounds. Communication XXXIII.  
Oxidizing ammonolysis of p- and m-xylene mixtures

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh  
nauk. Trudy. v. 8. Alma-Ata, 1962. Kataliticheskiy  
sintez monomerov. 109-114

TEXT: The synthesis of terephthalic dinitrile (I) and isophthalic  
dinitrile (II) was investigated by reaction of mixtures of p- and  
m-xylene of various molar ratios in amounts of 40-70 g with 120-175 g of  
NH<sub>3</sub>, 350-500 g of H<sub>2</sub>O, and 2400-4800 liters of air per hour and per liter  
of catalyst, with contact times of 0.2 - 0.5 sec, at 350-410°C. Molten  
lead vanadate served as catalyst. The contents of I and II in the  
reaction product were determined by polarography. Results: The yields  
of I and II were only slightly affected by a change in the contact time  
and in the rate of adding the reaction mixture. When the reaction

Card 1/2

Oxidation of organic compounds...

S/850/62/008/000/003/004  
B119/B101

temperature is raised the yield of I + II reaches a maximum between 360 and 390°C, while the yield of gaseous substances increases steadily. The formation of I and II depends essentially on the molar ratio of the xylene isomers used: under otherwise equal reaction conditions, the yields of I were ~39, ~3, and ~52%, whilst those of II were ~35, ~3, and over 80% respectively, at the ratios m-xylene : p-xylene = 4:1, 1:1, and 1:9 (referring to the theoretical maximum yield). There are 5 figures.

Card 2/2

MANUKOVSKAYA, L. G.; SOLOMIN, A. V.; SUVOROV, B. V.; RAFIKOV, S. R.

Continuous method of production of terephthalic acid by the  
liquid phase oxidation of m-xylene. Neftekhimia 2 no.4:531-535.  
Jl-Ag '62. (MIRA 15:10)

1. Kazakhskiy gosudarstvennyy sel'skokhozyaystvennyy institut  
i Institut khimicheskikh nauk AN KazSSR, Alma-Ata.

(Terephthalic acid) (Xylene)

RAFIKOV, S.R.; SEMBAYEV, D.Kh.; SUVOROV, B.V.

Oxidation of organic compounds. Part 28: Oxidative ammonolysis  
of acrolein. Zhur.ob.khim. 32 no.3:839-841 Mr '62.  
(MIRA 15:3)

1. Institut khimicheskikh nauk AN Kazakhskoy SSR.  
(Acrolein) (Acrylonitrile)

PROKOF'YEVA, M.V.; RAFIKOV, S.R.; SUVOROV, B.V.

Interaction of aromatic acid nitriles with alcohols in the presence  
of hydrogen chloride. Zhur.ob.khim. 32 no.4:1318-1323 Ap '62.  
(MIRA 15:4)

1. Institut khimicheskikh nauk AN Kazakhskoy SSR.  
(Nitriles) (Alcohols)

ARKHIPOVA, I.A.; RAFIKOV, S.R.; SUVOROV, B.V.

Production of nicotinic and isonicotinic acids and their amides  
by the hydrolysis of nitriles. Zhur.prikl.khim. 35 no.2:389-  
393 F '62. (MIRA 15:2)

1. Institut khimicheskikh nauk AN KazSSR.  
(Nicotinic acid) (Isonicotinic acid) (Nitriles)

KUDINOVA, V.S.; RAFIKOV, S.R.; SAGINTAYEVA, K.D.; SUVOROV, B.V.

Role of water vapors in the reactions of the vapor-phase  
catalytic oxidation of aromatic compounds. Zhur.prikl.khim.  
35 no.10:2313-2318 O '62. (MIRA 15:12)

1. Institut khimicheskikh nauk AN Kazakhskoy SSR.  
(Aromatic compounds) (Oxidation)- (Water vapor)

SUVOROV, B.V.; RAFIKOV, S.R.; KAGARLITSKIY, A.D.; SAMIROVA, A.A.;  
SVETASHEVA, V.A.

Oxidation or organic compounds. Report No.33: Oxidative  
ammonolysis of a mixture of p- and m-xylenes. Trudy Inst.khim.  
nauk AN Kazakh.SSR 8:109-114 '62.  
(Xylene) (Ammonolysis)

(MIRA 15:12)

(Oxidation)

KUDINOVA, V.S.; SUVOROV, B.V.; UMAROVA, R.U.

Oxidation of organic compounds. Report No.34: Catalytic vapor phase oxidation of n-propylbenzene, n-butylbenzene, and some of their derivatives. Trudy Inst.khim.nauk AN Kazakh.SSR 8:157-162 '62.

(Benzene) (Oxidation)

IZEL'SON, Ya.Z.; RAFIKOV, S.R.; SUVOROV, B.V.

Oxidation of organic compounds. Report No.34: Dissociation of  
vanadium pentoxide. Izv.AN Kazakh. SSR. Ser.tekh.i khim.nauk  
no.1:11-13 '63. (MIRA 17:3)

S/079/63/033/002/007/009  
D204/D307

AUTHORS: Arkhipova, I.A., Rafikov, S.R. and Suvorov, B.V.

TITLE: Hydrolysis of terephthalodinitrile with aqueous ammonia under pressure

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 2, 1963,  
637 - 641

TEXT: The above reaction was studied to determine the possibility of selectively preparing the desired intermediate products. Terephthalodinitrile (TDN), prepared by the oxidative ammonolysis of p-xylene of Pb vanadate, was reacted with aqueous ammonia (taken in various TDN: ammonia:water molar ratios, n) at 200-300°C, in a stainless steel autoclave under pressures from 5 to 40 atm., over 3 hours. For n = 1:14:210, the yields of the diammonium salt of terephthalic acid (I) increased from ~ 30 % at 200°C to ~ 100 % at 300°C, whilst the yields of  $\text{NH}_4\text{COOC}_6\text{H}_4\text{CONH}_2$  (II) fell from ~ 50 % at 200°C to ~ 10 % at 250°C. At 200°C, with TDN:H<sub>2</sub>O = 1:210, increasing the molar ratio of NH<sub>3</sub>:TDN to >8 favored the formation of I and II, whilst 30-40 % of

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S/079/63/033/002/007/009

Hydrolysis of terephthalodinitrile ... D204/D307

each of  $\text{NH}_2\text{COC}_6\text{H}_4\text{CN}$  and  $\text{NH}_2\text{COC}_6\text{H}_4\text{CONH}_2$  was formed at  $\text{NH}_3:\text{TDN} = 1-2$ . A small amount of ammonium p-cyanobenzoate was also formed with low concentrations of  $\text{NH}_3$ . At  $250^\circ\text{C}$ , increased concentrations of water promoted the rate of reaction and favored the formation of the final products of hydrolysis. During the formation of  $\text{-CONH}_2$  from  $\text{-CN}$ , the ammonia behaved only as a catalyst; in the conversion of  $\text{-CONH}_2$  to  $\text{COONH}_4$  however, considerably higher concentrations of  $\text{NH}_3$  were required. There are 3 figures.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR (Institute of Chemical Sciences of the Academy of Sciences of the Kazakh SSR)

SUBMITTED: March 14, 1962

Card 2/2

SUVOROV, B.V.; RAFIKOV, S.R.; ZHUBANOV, B.A.; KOSTROMIN, A.S.; KUDINOVA, V.S.;  
KAGARLITSKIY, A.D.; KHMURA, M.I.

Catalytic synthesis of the dinitrile of terephthalic acid.  
Zhur. prikl. khim. 36 no.8:1837-1847 Ag '63. (MIRA 16:11)

KAGARLITSKIY, A.D.; SUVOROV, B.V.; RAFIKOV, S.R.; KOSTROMIN, A.S.

Catalytic synthesis of benzonitrile by means of the oxidative  
ammonolysis of aromatic compounds. Zhur. prikl. khim. 36  
no.8:1848-1852 Ag '63. (MIRA 16:11)

SEMBAYEV, D. Kh.; SUVOROV, B.V.; RAFIKOV, S.R., akademik

Oxidizing ammonolysis of methyl vinyl ketone. Dokl. AN SSSR 155  
no. 4:868-871 Ap '64. (MIRA 17:5)

1. Institut khimicheskikh nauk AN Kazakhskoy SSSR. 2. AN Kazakhskoy  
SSSR (for Rafikov).

POLIMBETOVA, F.A.; SIVCHOV, B.V.; RAFIKOV, S.R.; MAGARLITSKIY, A.D.;  
BOGDANOVA, Ye.D.

Some results of research on the synthesis and tests of the growth  
promoting substance "nikazin". Vest. AN Kazakh. SSR. 20 no.7:3-10  
J1 '64. }  
(MIRA 17:11) }

SUVOROV, B.V.; RAFIKOV, S.R.; KAGARLITSKIY, A.D.

Oxidative ammonolysis of organic compounds. Usp. khim. 34 no.9:1526-  
1549 S '65. (MIRA 18:10)

1. Institut khimicheskikh nauk AN KazSSR.

OK by D.F.

4  
18 4E2C

A Effect of Roll Shape and Temperature on the Weldability of Sheets in Packet Rolling /D. I. Stepanov and V. F. Sosulin, (Stal', 1956, (10), 501-604). [In Russian]. In this article theories on the reasons for sheet-to-sheet welding during packet rolling are critically reviewed and some theoretical views are advanced. As a practical measure it is recommended that, to minimize welding, the thinner the sheet being rolled, the higher should be the roll temperature and the lower the metal heating temperature—s. k.

PLH

SUVOROV, E.V.

Automatic diffractometers for studying single crystals. (Review).  
Nauch. trudy TashGU no.262 Fiz. nauki no.22:92-102 '64.  
(MIRA 18:5)

SOGRISHIN, Yu.P.; SUVOROV, F.G.; KOBYAKOVSKIY, N.F.

High-speed ballistic impact tester. Zav. lab. 29 no.9:1134-  
1135 '63. (MIRA 17:1)

1. Ekspertimental'nyy nauchno-issledovatel'skiy institut  
kuznechno-pressovogo mashinostroyeniya.

L 15x04-65	EWT(d)/EXT(m)/EWA(d)/EWP(v)/EMP(t)/EMP(k)/EMP(h)/EMP(b)/EMP(l)	Pf-4
ACCESSION NR: AT-1048351 ASD(a)-5/ASD(m)-3		JD/S/3000/64/000/005/0043/0057
Hd		
AUTHOR: <u>Sogrinshin, Yu. P.</u> (Candidate of technical sciences); <u>Suvorov, F. G.</u> (Engi- <sup>B4/</sup> neer.); <u>Tobyakovskiy, N. F.</u> (Engineer); <u>Ponov, A. V.</u> (Engineer).		
TITLE: Determination of the basic parameters of machines for high-velocity deformation of metals		
SOURCE: Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut kuznechno- pressovogo mashinostroyeniya. Nauchnye trudy*, no. 8, 1964. Novoye v kuznechno- stampovochnom proizvodstve (Latest developments in the forging industry), 43-57		
TOPIC TAGS: metal deformation, cold pressing, hot pressing, ram velocity, impact efficiency		
ABSTRACT: The paper discusses the results of an investigation of how to select the type, construction and parameters of a machine for high-velocity deformation of metals. A special experimental instrument was designed with a drive supplied by exploding a gun- powder charge. The machine was used to determine the dependence of the velocity of the ram on the gas pressure, and also to investigate the stability of the ram velocity (im- pact energy) for constant charging conditions and to determine the impact efficiency. Advantages and shortcomings of the explosion drive and the effect of high-velocity impact on the durability of the instrument were examined. Cold and hot pressing was employed, Cont 1/2		

L 1660j-65

ACCESSION NR: AT4048351

and various alloys and steels were tested at deformation rates of 25, 50 and 100 m/sec. Ram velocities before impact and gas pressures were measured and simultaneously recorded on oscillograms. The special methods for making these measurements are described. A ram weighing 3 kg and suitably suspended on rods having a shear strength of 700, 1350 and 2600 kg, and gunpowder charges weighing 3, 5, 6, 8 and 10 grams were used. The experiments showed that the velocity of the ram increases almost proportionally with the gunpowder charge. Thus, the ram velocities varied from 20-30 m/sec to 100 m/sec for gunpowder charges increasing from 3 to 10 g; the gas pressure varied within the limits of 15-180 atm. The impact efficiency was found to be within the interval 0.82-0.98. "Engineer V. M. Stepanov, Engineer V. Ya. Moroz and Technician I. Ye. Belova also took part in the work." Orig. art. has: 5 figures, 1 table and 6 formulas.

ASSOCIATION: Eksperimental'ny\*y nauchno-issledovatel'skiy institut kuznechno-pressovogo mashinostroyeniya, Moscow (Experimental Scientific Research Institute of Forging Machinery)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM, AS

NO REF SOV: 002

OTHER: 002

Card 2/2

L 15161-65 ASD(m)-3	EWT(m)/EWA(d)/EWP(t)/EPR/EWP(k)/EWP(b) JD/HW	PF-4/Ps-4 IJP(c)/	
ACCESSION NR: AT4048354		S/3000/64/000/008/0130/0135	
AUTHOR: Sogrinin, Yu. P. (Candidate of technical sciences); Suvorov, F. G.: (Engineer); Moroz, V. Ya. (Engineer)			
TITLE: High-velocity sheet metal stamping using rubber <span style="float: right;">B</span>			
SOURCE: Moscow. Eksperimental'nyye nauchno-issledovatel'skiy institut kuznechno-pressovogo mashinostroyeniya. Nauchnyye trudy*, no. 8, 1964. Novoye v kuznechno-shtampovochnom proizvodstve (Latest developments in the forging industry), 130-135.			
TOPIC TAGS: metal stamping, sheet metal forging, rubber die, aluminum alloy forging, stainless steel forging			
ABSTRACT: The authors briefly list the advantages and disadvantages of stamping sheet-metal stock using rubber. They note that in the majority of cases the rubber pads have to be shaped by hand. The results of an investigation carried out in order to assess the technological potentialities of high-speed stamping of sheet-metal blanks using rubber are then described. Aluminum alloy and stainless steel sheets were used. The rubber employed was in the form of a disk 0.207 m in diameter and 0.07 m in thickness. The velocities of deformation for forming operations were 15-20 m/sec and the energy of impact was about 5880 joules. In punching operations, the velocities used were equal to 8-10 and 15-20 m/sec; the impact			
Card 1/3			

L 15161-65

ACCESSION NR: AT4048354

energy was, on the average, 1420 and 5690 joules, respectively. The mechanical properties of the rubber used in the experiments are tabulated and photographs of some stamped specimens are shown. The edges of the contour and of the punched holes were smooth. The following forming operations were then investigated: flanging, extrusion and extraction. The main purpose of these tests was to compare the degree of folding, the accuracy of relief shaping, and the magnitudes of the flanging and extrusion factors for various deformation velocities. The features of high-speed stamping using rubber are as follows: during impact, high specific pressures are developed briefly (they are greater the smaller the degree of deformation for the same impact energy). The high value of the specific pressures obtained decreases flanging, thus improving the relief and the accuracy of stamping. At the same time, the high impact velocities make it impossible to concentrate folds in separate places on the blank, leading instead to the formation of numerous shallow, uniformly distributed, folds. High-velocity pressing using rubber makes it easier to shape the blank, to obtain higher borders and relatively complex configuration of detail as well as a high accuracy of the stamped parts. In cutting operations, the high specific pressures obtained make it possible to obtain small chamfering radii in the corners. The durability of the rubber disk was found to be satisfactory. The increased velocity of deformation using rubber makes it possible to widen the technological potentialities of stamping operations.

Orig. art. has: 3 figures and 3 tables.

Card 2/3

L 15161-65

ACCESSION NR: AT4048354

ASSOCIATION: Eksperimental'nyy nauchno-issledovatel'skiy institut kuznechno-  
pressovogo mashinostroyeniya, Moscow (Experimental Scientific Research Institute  
of Forging Machinery)

SUBMITTED: 00

ENCL: 00

SUB CODE: IE, MM

NO REF Sov: 002

OTHER: 000

Card 3/3

ALADINSKIY, P.I.; ARONSKIND, S.Sh.; GLAZKOVSKIY, V.A.; KVASKOV, A.P.;  
SUVOROV, F.S.; SHIMANENKOV, I.V., redaktor; BASMANOV, V.A.,  
redaktor; SERGEYEVA, N.A., redaktor; MANINA, M.P., tekhnicheskiy  
redaktor

[Results of the organization and work of an ore-dressing laboratory]  
Opyt organizatsii i raboty obogatitel'noi laboratorii. Trudy lab.  
geol.upr. no.3:3-57 '52. [Microfilm] (MIRA 7:11)  
(Ore dressing)

SUVCHOV, I. S.

"Methods and Rational Means of Concentration; Manganese Ores from Northern Ural Deposits." Cand Tech Sci, Sverdlovsk Mining Inst imeni V. V. Vakhrushev, Min Higher Education USSR, Sverdlovsk, 1955. (ML, No 10, Mar 55)

SO: Sum. No. 670, 29 Sep 55-Survey of Scientific and Technical  
Dissertations Defended at USSR Higher Educational Institutions (15)